

**In the Claims:**

Please cancel claim 1 without prejudice.

Please amend claims 2-7, 11-14, and 16-17 as follows:

1. (canceled)

2. (currently amended) An instrument for measuring particles of combustion exhausts as recited in claim 4 5 further includes a plurality of optical elements coupling said high intensity laser pulse to said sample cell.

3. (currently amended) An instrument for measuring particles of combustion exhausts as recited in claim 2 wherein comprising:

a laser for producing a high intensity laser pulse;

a sample cell for receiving combustion exhaust input and said high intensity laser pulse;

a plurality of optical elements coupling said high intensity laser pulse to said sample cell; said plurality of optical elements include including a plurality of cylindrical lenses; and

at least one detector for detecting a signal generated by particles in said received combustion exhaust input, said signal including laser induced incandescence (LII).

4. (currently amended) An instrument for measuring particles of combustion exhausts as recited in claim 4 3 further includes a plurality of focusing elements coupling said signal generated by particles in said received combustion exhaust input in said sample cell to said at least one detector.

5. (currently amended) An instrument for measuring particles of combustion exhausts as recited in claim 4 wherein comprising:

a laser for producing a high intensity laser pulse;

a sample cell for receiving combustion exhaust input and said high intensity laser pulse;

at least one detector for detecting a signal generated by particles in said received combustion exhaust input, said signal including laser induced incandescence (LII); and

a plurality of focusing elements coupling said signal generated by particles in said received combustion exhaust input in said sample cell to said at least one detector;

said plurality of focusing elements include including a plurality of spherical lenses.

6. (currently amended) An instrument for measuring particles of combustion exhausts as recited in claim [[4]] 5 further includes a filter for filtering said signal generated by particles in said received combustion exhaust input.

7. (currently amended) An instrument for measuring particles of combustion exhausts as recited in claim 4 5 further includes signal conditioning electronics coupled to said at least one detector.

8. (original) An instrument for measuring particles of combustion exhausts as recited in claim 7 wherein said signal conditioning electronics includes a peak detector.

9. (original) An instrument for measuring particles of combustion exhausts as recited in claim 7 wherein said signal conditioning electronics includes a calibration multiplier.

10. (original) An instrument for measuring particles of combustion exhausts as recited in claim 7 wherein said signal conditioning electronics includes a display for displaying particle measurements.

11. (currently amended) An instrument for measuring particles of combustion exhausts as recited in claim 4 5 includes a display coupled to said at least one detector for displaying data related to mass concentration, number density, and particle size of particles in said received combustion exhaust input.

12. (currently amended) An instrument for measuring particles of combustion exhausts as recited in claim 4 5 wherein said at least one detector for detecting a signal generated by particles in said received combustion exhaust input detects said signal during transient operation of an engine.

13. (currently amended) An instrument for measuring particles of combustion exhausts as recited in claim 4 5 wherein said at least one detector for detecting a signal generated by particles in said received combustion exhaust input includes at least one photo-multiplier tube (PMT) detector.

14. (currently amended) An instrument for measuring particles of combustion exhausts as recited in claim 4 5 wherein said at least one detector for detecting a signal generated by particles in said received combustion exhaust input includes a pair of photo-multiplier tube (PMT) detectors.

15. (original) An instrument for measuring particles of combustion exhausts as recited in claim 14 includes signal conditioning electronics coupled to each of said pair of photo-multiplier tube (PMT) detectors.

16. (currently amended) An instrument for measuring particles of combustion exhausts as recited in claim 4 3 includes a dilution tunnel coupling said combustion exhaust input to said sample cell.

17. (currently amended) A method for measuring particles of combustion exhausts comprising the steps of:

utilizing a laser, producing a high intensity laser pulse;  
receiving a combustion exhaust input and ~~said high intensity laser pulse~~ in a sample cell;

coupling said high intensity laser pulse to said sample cell using a plurality of optical elements; said plurality of optical elements including a plurality of cylindrical lenses; and

detecting a signal generated by particles in said received combustion exhaust input, said signal including laser induced incandescence (LII).

18. (original) A method for measuring particles of combustion exhausts as recited in claim 17 further includes the steps of conditioning said detected signal and displaying data related to the particles in said received combustion exhaust input.

19. (original) A method for measuring particles of combustion exhausts as recited in claim 18 wherein the step of displaying data related to the particles in said received combustion exhaust input includes the steps of displaying data related to mass concentration, number density, and particle size of particles in said received combustion exhaust input.

20. (original) A method for measuring particles of combustion exhausts as

recited in claim 17 wherein the step of detecting a signal generated by particles in said received combustion exhaust input includes the detecting a signal generated by particles in said received combustion exhaust input during transient operation of an engine.